

CLAIMS

1. A process for making an electronic device which comprises applying a non-aqueous plate-resistant ink by ink jet printing to selected areas of a dielectric substrate, optionally laminated with an electrically conductive metal(s), exposing the plate resistant ink to actinic and/or particle beam radiation to effect polymerisation, adding one or more metal layers by electrolytic or electroless deposition, the upper layer of which is an etch-resistant metal(s), removing the polymerised plate-resistant ink with alkali and finally removing the electrically conductive metal(s) which are optionally directly laminated to the dielectric substrate and not protected by an upper layer of etch-resistant metal(s) by chemical etching wherein the plate-resistant ink is substantially solvent-free and comprises:

- A) 30 to 90 parts acrylate functional monomers free from acid groups comprising mono- or higher functionality wherein 5 to 95% by weight are mono-functional monomers;
- B) 1 to 30 parts acrylate functional monomer containing one or more acid groups;
- C) 0 to 20 parts polymer or prepolymer;
- D) 0 to 20 parts radical initiator;
- E) 0 to 5 parts colorant;
- F) 0 to 5 parts surfactant; and

where the ink has a viscosity of not greater than 30 cPs (mPa.s) at 40°C and all parts are by weight.

2. A process as claimed in claim 1 wherein the amount of mono-functional acrylate monomer is not less than 70% by weight of component A).

3. A process as claimed in either claim 1 or claim 2 wherein the amount of component B) is 1 to 10 parts by weight.

4. A process as claimed in any one of claims 1 to 2 wherein the amount of component B) is not less than 3 parts by weight.

5. A process as claimed in any one of claims 1 to 4 wherein component B) is acrylic acid or mono-2-(methacryloyl)ethyl phthalate.

6. A process as claimed in any one of claims 1 to 5 wherein the radical initiator is a photo initiator activated by UV light.

7. A process as claimed in any one of claims 1 to 6 wherein the ink has a surface tension of from 20 to 40 mN/m.

8. A process as claimed in any one of claims 1 to 7 wherein the viscosity of the ink is from 8 to 20 cPs (mPa.s) at 40°C.

5 9. A process as claimed in any one of claims 1 to 8 wherein component B) has an acid value of not less than 100mg KOH/g.

10 10. A process as claimed in any one of claims 1 to 9 wherein the total etch-resistant ink has an acid value greater than 30mg KOH/gm.

11. An process as claimed in any one of claims 1 to 10 wherein the amount of component C) is zero.

15 12. A process as claimed in any one of claims 1 to 11 wherein the amount of radical initiator is not less than 0.1 parts.

13. A process as claimed in any one of claims 1 to 12 wherein the dielectric substrate is laminated with an electrically conductive metal.

20 14. A process as claimed in claim 13 wherein the electrically conductive metal is copper.

25 15. A process as claimed in either claim 13 or claim 14 wherein the metal layer(s) is deposited by electrolytic deposition.

16. A process as claimed in claim 15 wherein the metal layer(s) is copper, nickel, tin/lead, silver, palladium or gold.

30 17. A process according to any one of the preceding claims wherein the number of parts of components A) + B) + C) + D) + E) + F) = 100.

18. An electronic device containing electrically conductive circuitry which is made by the process as claimed in any one of the preceding claims.

35 19. An electronic device as claimed in claim 18 which is a printed circuit board.